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(54) Title: MENTAL STATE WELL BEING MONITORING

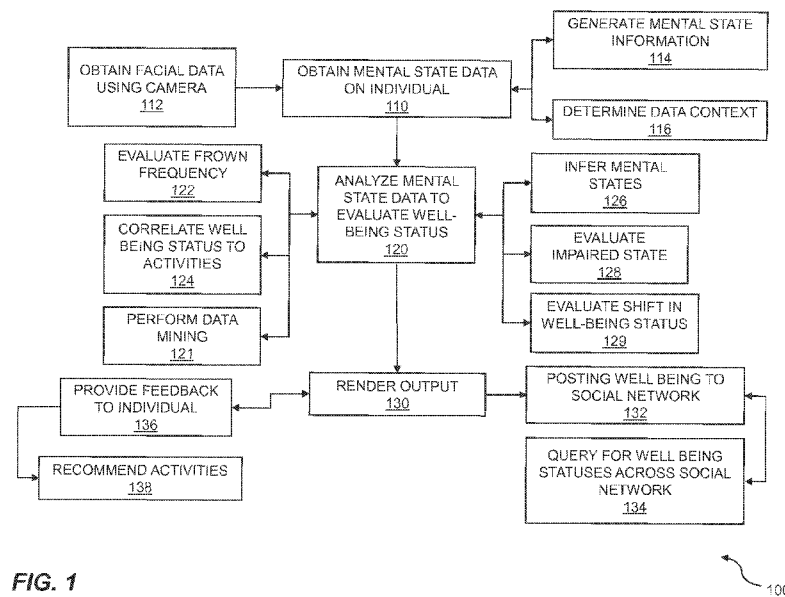


FIG. 1

(57) Abstract: The mental state of an individual is obtained to determine their well-being status. The mental state is derived from an analysis of facial information and physiological information of an individual. The well-being status of other individuals is correlated to the well-being status of the first individual. The well-being status of the individual or group of individuals is rendered for display. The well-being status of an individual is used to provide feedback and to recommend activities for the individual.

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## AMENDED CLAIMS

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What is claimed is:

1. A computer-implemented method for mental state analysis comprising:  
obtaining mental state data on an individual;  
analyzing the mental state data to evaluate a well-being status for the individual;  
evaluating a shift in well-being status; and  
rendering an output based on the well-being status.
2. The method of claim 1 wherein the rendering includes posting the well-being status to a social network.
3. The method of claim 2 further comprising querying for well-being statuses across the social network.
4. The method of claim 3 wherein the querying is in light of a context.
5. The method of claim 1 wherein the rendering includes providing feedback to the individual.
6. The method of claim 5 wherein the feedback describes the well-being status.
7. The method of claim 5 wherein the feedback describes recommended activities.
8. The method of claim 7 wherein the recommended activities include one or more of watching a video, playing a game, or participating in a social function.
9. The method of claim 5 wherein the feedback recommends eliminating an activity.
10. The method of claim 9 wherein the eliminating an activity is for a period of time.
11. The method of claim 10 wherein the eliminating an activity is for a time of day.

12. The method of claim 1 wherein the analyzing the mental state data includes evaluating frown frequency, smile frequency, or laugh frequency.
13. The method of claim 1 further comprising correlating the well-being status to activities performed by the individual.
14. The method of claim 1 further comprising calendaring the well-being status.
15. The method of claim 1 wherein the well-being status is used in emotional journaling.
16. The method of claim 1 further comprising scheduling an activity on a calendar based on the well-being status.
17. The method of claim 1 further comprising handling phone answering based on the well-being status.
18. The method of claim 1 further comprising handling email based on the well-being status.
19. The method of claim 1 wherein the well-being status provides input to a recommendation engine.
20. The method of claim 1 further comprising aggregating the well-being status for the individual with well-being statuses for a plurality of other people.
21. The method of claim 20 further comprising correlating the well-being statuses with activities performed by the plurality of other people.
22. The method of claim 1 wherein the analyzing includes evaluation of an impaired state.
23. The method of claim 1 further comprising generating mental state information based on the mental state data.

24. The method of claim 1 wherein the mental state data includes facial data, physiological data, or accelerometer data.
25. The method of claim 24 wherein the obtaining of facial data comprises using a webcam.
26. The method of claim 24 wherein the physiological data includes one or more of heart rate, heart rate variability, blink rate, electrodermal activity, skin temperature, and respiration.
27. The method of claim 24 wherein the physiological data is derived from a biosensor.
28. The method of claim 1 wherein the well-being status is used for advertisement selection.
29. The method of claim 1 wherein the well-being status is used to modify a game.
30. The method of claim 1 wherein the well-being status is used to modify a media presentation.
31. The method of claim 1 further comprising inferring mental states based on the mental state data which was obtained wherein the mental states include one or more of frustration, confusion, disappointment, hesitation, cognitive overload, focusing, engagement, attention, boredom, exploration, confidence, trust, delight, disgust, skepticism, doubt, satisfaction, excitement, laughter, calmness, sadness, happiness, stress, anger, and curiosity.
32. The method of claim 31 wherein the mental state is factored into well-being status evaluation.
33. The method of claim 1 wherein the mental state data is obtained from multiple sources.
34. The method of claim 33 wherein at least one of the multiple sources is a mobile device.

35. The method of claim 1 wherein the mental state data is collected sporadically.
36. The method of claim 1 wherein the analyzing of the mental state data is performed by a web service.
37. The method of claim 1 further comprising determining context during which the mental state data is captured.
38. The method of claim 37 wherein information on the context is tagged to the mental state data.
39. The method of claim 1 wherein the mental state data is obtained as a background task by a device and the analyzing the mental state data to evaluate the well-being status is accomplished in an ongoing fashion.
40. (Cancelled)
41. The method of claim 1 wherein the shift is correlated to a certain event.
42. The method of claim 1 wherein the shift is compared to previous events.
43. The method of claim 1 wherein the shift is compared to previous shifts.
44. The method of claim 1 wherein the well-being status is determined periodically over a period of time.
45. The method of claim 1 further comprising performing data mining on previous mental state data and evaluating contributing factors toward the well-being status.
46. A computer program product embodied in a computer readable medium for mental state analysis, the computer program product comprising:
  - code for obtaining mental state data on an individual;

code for analyzing the mental state data to evaluate a well-being status for the individual;

code for evaluating a shift in well-being status; and

code for rendering an output based on the well-being status.

47. The computer program product of claim 46 wherein the rendering includes posting the well-being status to a social network.

48. The computer program product of claim 47 further comprising code for querying for well-being statuses across the social network.

49. The computer program product of claim 46 further comprising code for correlating the well-being status to activities performed by the individual.

50. The computer program product of claim 46 wherein the well-being status provides input to a recommendation engine.

51. The computer program product of claim 46 further comprising code for aggregating the well-being status for the individual with well-being statuses for a plurality of other people.

52. The computer program product of claim 51 further comprising code for correlating the well-being statuses with activities performed by the plurality of other people.

53. The computer program product of claim 46 wherein the mental state data is obtained as a background task by a device and the analyzing the mental state data to evaluate the well-being status is accomplished in an ongoing fashion.

54. The computer program product of claim 46 further comprising code for evaluating a shift in well-being status.

55. The computer program product of claim 46 wherein the well-being status is determined periodically over a period of time.

56. The computer program product of claim 46 further comprising code for performing data mining on previous mental state data and evaluating contributing factors toward the well-being status.
57. A computer system for mental state analysis comprising:  
a memory which stores instructions;  
one or more processors attached to the memory wherein the one or more processors, when executing the instructions which are stored, are configured to:  
obtain mental state data on an individual;  
analyze the mental state data to evaluate a well-being status for the individual;  
evaluate a shift in well-being status; and  
render an output based on the well-being status.
58. The system of claim 57 wherein rendering includes posting the well-being status to a social network.
59. The system of claim 58 wherein the one or more processors are further configured to query for well-being statuses across the social network.
60. The system of claim 57 wherein the one or more processors are further configured to correlate the well-being status to activities performed by the individual.
61. The system of claim 57 wherein the well-being status provides input to a recommendation engine.
62. The system of claim 57 wherein the one or more processors are further configured to aggregate the well-being status for the individual with well-being statuses for a plurality of other people.
63. The system of claim 62 wherein the one or more processors are further configured to correlate the well-being statuses with activities performed by the plurality of other people.

64. The system of claim 57 wherein the mental state data is obtained as a background task by a device and the analyzing the mental state data to evaluate the well-being status is accomplished in an ongoing fashion.
65. The system of claim 57 wherein the one or more processors are further configured to evaluate a shift in well-being status.
66. The system of claim 57 wherein the well-being status is determined periodically over a period of time.
67. The system of claim 57 wherein the one or more processors are further configured to perform data mining on previous mental state data and evaluating contributing factors toward the well-being status.
68. A computer-implemented method for mental state analysis comprising:  
receiving mental state data on an individual;  
analyzing the mental state data to evaluate a well-being status for the individual based on evaluating a shift in well-being status; and  
sending the well-being status for rendering.
69. A computer-implemented method for mental state analysis comprising:  
capturing mental state data on an individual;  
analyzing the mental state data to provide mental state information; and  
sending the mental state information to a server for analyzing, wherein the analyzing will provide a well-being status for the individual based on evaluating a shift in well-being status, and wherein the well-being status will be rendered.
70. A computer-implemented method for mental state analysis comprising:  
receiving a well-being status based on mental state data obtained on an individual wherein the well-being status results from analyzing the mental state data to provide the well-being status for the individual based on evaluating a shift in well-being status; and  
rendering an output based on the well-being status.